ENTOMOLOGICAL NEWS

AND

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OUR illustration was furnished by our good friend, Mr. Frank M. Jones, of Wilmington, Del. A previous drawing of moths by the same gentleman was much appreciated by many of our readers. There has been confusion for years in regard to two of the species represented—*zabulon* and *hobomok*. Dr. Strecker was, I believe, the first author to catalogue these correctly, but he has not been followed by subsequent writers; *zabulon* and *hobomok* are certainly distinct species, the former having a dark female and the latter having a tawny and also a black female (*pocahontas*). The principal differences between the dark females of the two species are the following: *zabulon* ♀ is smaller, brighter in color, and the spots on the superiors above are bright yellow and more clearly defined, the line of demarcation between spot and the wing being much sharper than in dark ♀ *hobomok*. The females of *zabulon* show no discal dash, while in *hobomok* they are quite apparent in the specimens before me. The underside of ♀ *zabulon* is always much more brilliantly colored than in the other species. I have examined all the large collections in the country excepting one, and many of the smaller ones, and have never seen a female *zabulon* of the color of the male. *Pamphila aaroni* belongs to the group *arpa*, *palatkæ*, etc.

THE NUMBER OF PROLEGS IN INSECT LARVÆ.

By Wm. Hampton Patton, Hartford, Conn.

Prolegs, normally present in Lepidopterous larvæ upon abdominal segments 3, 4, 5, 6 and 9 are lacking in many Noctuids upon 3 and 4; e. g., *Erastria* and *Drasteria*. No fully-developed prolegs are found on segments 3 and 4 of *Calocampa* previous to the third moult. The Hypenini have no prolegs on segment 3; likewise *Nola*, the young larvæ of *Leucania* and *Catocala*, and the larvæ of *Helia americalis* Guen. and *Anomis texana* Riley (although other *Helias* and *Aletia* have the usual number). All Geometrids, except *Anisopteryx* which has prolegs on abdominal segment 5, have no prolegs on segments 3, 4 and 5.

In *Argyromyges* and *Gracilaria* the prolegs are present on segments 3, 4 and 5, but absent on 6. *Pronuba* has no trace of prolegs. *Aspidisca* is apodous, having the thoracic feet represented by sucker-like discs, the anal prolegs represented by small lobes each with a recurved hook. *Antispila* and *Prodoxus* have no trace of either prolegs or legs. *Prodoxus cinereus* Riley resemble *Aspidisca*. In many Notodontians the anal prolegs are converted into a pair of tentacles.

The existence of three pairs of thoracic feet I have verified in *Limacodes*, although none of the Cochliopods have prolegs. Prolegs are present in young bag-worms (*Œceticus* and *Thyridopteryx*), but are not conspicuous in the full-grown worms, being represented by the hooks only in *Thyridopteryx* and *Eumeta*.

Phyllocnistis and *Nepticula* have nine pairs of hookless prolegs. *Megalopyge* (*Lagoa*) and *Chrysopyga* have seven pairs of prolegs. The prolegs on the second and seventh abdominal segments of *M. crispata* have been found (contrary to Miss Murtfeldt's statement in "Can. Ent.," viii, 202, November, 1896), to be without hooklets, thus differing from the normal larger prolegs on the third to sixth segments. Micros have the hooklets in an ellipse or circle; in macros they are reduced to an outer row.

Eriocephala calthella has eight pairs of abdominal legs jointed like the thoracic *Trichacis* (Proctotrupidæ) larva has ventral prolegs (Fyles "Can. Ent.," June '96).

Larvæ of sawflies may be distinguished from those of Lepidoptera (excepting the first stage of *Lithocolletis*, which has but one ocellus—cf. V. T. Chambers, "Journ. Cin. Soc.," N. H.,

ii, pt. 2), by having only one ocellus and, when prolegs are present, by there being more than ten and without hooklets. *Pamphilius* has no prolegs. Tenthredinidæ have (22 in all) prolegs on segments 5–11 and 13. Cimbicidæ have (22) prolegs on 5–11 and 13. St. Fargeau's statement, quoted on page 9, of Norton's "Catalogue," that the larvæ of *Zaræa* and *Abia* have only 20 legs is erroneous; for, I find *Abia inflata* Nort. to have 22 legs in agreement with the other Cimbicidæ. Lophyridæ have (22) prolegs on segments 6–13. Nematidæ have (20) prolegs on segments 5–10 (*Cladius*) or 6–11 and 13. Acorduleceridæ have (20) abortive prolegs on segments 6–11 and 13. Many apodous larvæ of Hymenoptera have an anal sucker.

Phryganeid larvæ have a pair of anal prolegs.

Chrysopa has an anal disc used in locomotion.

Panorpa larvæ have 22 conical legs, situated as in the sawflies, besides anal legs or processes. *Bittacus* has two-jointed legs on each of the nine abdominal segments. *Sisyra* has jointed appendages on the first and seventh segments.

Hæmatobia larva has transverse rows of minute fleshy filaments at base of six ventral segments.

Simulium has a proleg on prothorax of larva. *Chironomus* larvæ have pairs of prolegs on the prothorax and on the last segment. The abdominal tubercles of *Chironomus* and *Ephydra* bear hooks. *Syrphus* larvæ have seven pairs of abdominal prolegs. *Blepharocera* larvæ has six pairs of conical prolegs and six median sucking discs; the pupæ has three pairs of suckers beneath abdomen.

In Coleoptera prolegs occur, ventral in *Entomoscelis* (Fletcher), ventral and dorsal in *Asclera* and *Nacerdes*, dorsal in *Mordellistena*, Cerambicidæ, etc. (Riley). Anal prolegs (sucking discs) occur in Lampyridæ, Coccinellidæ, Chrysomelidæ, etc. *Phytonomus* has tubercles without claws on all the ventral segments and uses them in clasping the leaf; it has also an anal sucker which it uses in locomotion.

Mrs. A. T. SLOSSON has lately sent me a pretty and interesting species of *Thecla* which she took in January of this year at Biscayne Bay, Florida I saw at once it was new to our fauna, but is not new to science, as it was described from Cuba by Herrich-Schäffer under the name of *martialis* (Corresp. Blatt. Regensb. 18, 164, 1864).—HENRY SKINNER.

NOTES ON EUROPEAN ENTOMOLOGICAL COLLECTIONS.

By PHILIP P. CALVERT.

XIV.—AMSTERDAM.

The centralization of facilities for study which Amsterdam offers to the zoological student is, we believe, unequaled elsewhere. The Zoological Society of that city maintains one of the largest gardens of living animals in existence. On the grounds is the building occupied by the Society, and containing, in the basement, a salt and fresh-water aquarium of twenty-two permanent, besides movable, tanks, and in the upper floor a zoological museum, while in adjoining wing houses the zoological laboratory of the University of Amsterdam, under the direction of Prof. Weber. The writer, having visited the Museum during the vacation when the curator was absent, was unable to inspect the entomological section, but in answer to a letter Dr. Johannes C. H. de Meijere kindly furnished some notes on the collections of insects, which are reproduced below. Dr. Coenraad Kerbert is Director of the Museum, whose staff also includes Dr. J. Th. Oudemans, known for his researches on the Macro-lepidoptera, Hymenoptera, Thysanura and Collembola.

"The most important collection of insects at Amsterdam is in the possession of the Royal Zoological Society [Koninklijk Zoologisch Genootschap] 'Natura Artis Magistra.' It is contained in two rooms, that are connected with the library, annexed to the Zoological Garden of the Society. As by the illness and subsequent death of the former conservator, the collection had gone somewhat into a state of decadence, it is now being totally reorganized. The intention is first to prepare a show collection as well of insects in general as, more especially, of those which inhabit the Netherlands. Of the latter the Lepidoptera are ready for the greater part and were exhibited to the public during the last weeks of the past year [1896].

"The collections are contained in rabbeted glass-topped, wooden boxes. The best represented are the Lepidoptera and Coleoptera. Notwithstanding that there are only few typical specimens, some extensive collections are here, as, for instance, the van Medenbach de Rooy collection (Lepidoptera), the Smit collection (chiefly Lepidoptera) and a very fine collection of Co-

leoptera from the Netherlands collected by Mr. E. Seipgens. Further, the Society possesses for temporary use a great number of indigenous Diptera, collected by Dr. de Meijere, at present conservator of the entomological and ethnographical collections of the Society."

———o———

APHIDS AND COCCIDS ASSOCIATING WITH ANTS.

An Account of Their Habits; with Bibliographical Notes.

By GEO. B KING, Lawrence, Mass.

Since the observations of Gould, Huber and others in their time, nothing of a definite character has been given to us by entomologists regarding the true habits of ants having aphids and coccids associated with them in their nests. Most of the writers on the subject took for granted what was said by the old authors. The purpose of the present article is to attempt to show that a large part of the published observations on the habits of ants and coccids associating in the nests of the former is erroneous, and to give results of personal observations and experiments made by long and continuous study of them I supposed, like all other naturalists apparently, from what I had read concerning them that the ants collected the aphids and coccids for the purpose of obtaining food for themselves during the Winter months; also that the ants went down into their burrows sufficiently far to escape a freezing temperature, where they remained until the following Spring. This I believe to be the general opinion given by all writers on this subject. My observations have been that the ants in question do not go deep into their burrows during the Winter, but remain where their nests become frozen, consequently being in a torpid and inactive state until the approach of warm weather. In this condition, of course, no food is required, which fact precludes the acception of the hitherto adopted theory of the association of ants and coccids. Some of the nests we will find in which the ants are all collected together in small piles, and this frequently before the ground becomes frozen, but too cold for them to be active, the coverings of their nests consisting only of a few sticks or stones for their shelter. The aphids and coccids are with them in separate places under the same covering. Some nests we may find in which the ants have deserted their

herds and have gone down but a few inches into the soil of which their nest is composed. Again we may find a few of the ants remaining among the herd of aphids or coccids as the case may be. The only purpose of the ants for collecting these insects in the Fall of the year is to supply them with food during the Fall and Spring months when other food is not obtainable.

We also find the eggs of aphids and coccids to be collected and cared for by the ants. These, too, are wholly unprotected from the frost, being set in a small orifice made by the ants under the stones, and when the weather becomes warm enough for the ants to become active they can easily be seen caring for them. It is a fact that ants do collect both aphids and coccids and their eggs in the Fall and release them in the Spring when their respective food-plants are fit for them to feed upon. Notwithstanding this we may find aphids and coccids at any season of the year associated with the ants, but very few in comparison to those that are found in Spring and Fall. That ants derive food from aphids and coccids by sipping the excretions from the abdominal tubes, and also that which exudes from the bodies in the form of sweat forming a sweet waxy substance and a fungus growth which is eagerly sought for and eaten by the ants is a well-proven fact.

I have found many new species of aphids and coccids in ants' nests which are as yet undescribed, and are now being worked up by Prof. Cockerell and F. A. Sirrine and myself. As soon as possible after their determination I shall try and give their habits according to my observations, and I hope to be able to give new facts in the matter.

Up to 1894 only nine different species of aphids are cited as being found in ants' nests. Three of the genus *Forda*, one of *Paracletus*, two of *Tychæa*, two of *Phizobius*, and one of *Eine*. Of coccids eight different species had been so found, viz.: of the genus *Lecanopsis* one, *Ripersia* three, *Exæretopus* one, *Spernococcus* one, *Orthizia* one, *Margarodes* one; of those that I have found and that have been determined are *Ripersia kingii* Ckll. (Can. Entmol., vol. xxviii, p. 222–224, 1896); *kingii* is quite frequently met with in the nests of *Lasius flavius* L., and *Lasius claviger* Rog. Its color seems to be variable, usually of a dark reddish shade inclining to purple when alive in the ants' nest, and sparingly covered with white fungus or waxy substance. They change to a violet still shading on the purple when put into alco-

hol. This species is collected by the ants early in September, and can be found with them until the latter part of April, but not so late if the season is advanced, for they are then taken out and placed upon their food-plant. I have not observed this species feeding upon any of the roots entering the ants' nests, but they are found placed in small clusters or herds attached to the stone covering the ants' formicary. They seem to be in as good condition in Spring as in the Fall of the year. Sometimes in the Spring they may be found detached from the covering of the nests and placed upon the surface of it, a small space being digged out for them. In such cases I have always found them thickly covered with a dark bluish cottony down. The size of the herds is variable; some may contain but five individuals, while others may contain a hundred or more. It is also found in small numbers mixed with other species of coccids, and at times with aphids, and will be farther noticed as we progress with the life-history of these insects.

The ants cause the aphids and coccids to excrete the desired nourishment by walking over and about them. The ant's antennæ are in constant motion. Their mandibles wide open, and can be easily seen feeding upon the excretions from the coccids, passing from one to the other. Should the weather be pleasant and warm when a nest of ants is disturbed which contains either aphids or coccids, the ants will collect them as speedily as possible and hastily take them into their retreats, which extend but a short distance below the surface of the nest. Sometimes we may find a few coccids and aphids hibernating with the ants under the surface, while some of the ants remain with the coccids on the surface of the nest all Winter as before stated. I have not as yet found the food-plant of *Ripersia kingii*.

Ripersia lassii Ckll. is of a somewhat smaller form, and is a clear white species when put into alcohol, but when alive seems to have a faint shade of flesh color and is sparingly covered with white down. I have not found it feeding in the nests of ants. The general habits of the ants caring for this species will also apply to that of *R. kingii* in many respects. It has not been found entirely covered with cottony down, and occurs in nests of *Lasius flavus* L. and *Lasius americanus* Em., the food-plant being unknown. The same habits will apply to *Ripersia flaveola* Ckll. The latter is of a light yellow color, sparingly covered

with white down, but not so completely as in *kingii*. Its color when put into alcohol is a light lemon-color and remains so ; has not been found feeding. Food-plant unknown.

What I have said of the habits of ant's aphids and coccids pertains to the species living in Massachusetts, and will no doubt apply to those of other localities with a similar climate. I wish at this time to thank Prof. Cockerell and Sirrine for their assistance in the determination of the coccids and aphids on which I am working ; also my esteemed friend, Ernest André, of France, without whose aid I would have been unable to determine the species of ants with which these insects have been found to be associated.

The literature treating of ants and coccids associating is quite scattering, and as far as I know is not extensive. Such as treat of ants and coccids alone are : an account of *Margarodes*, a new genus of insects found in the neighborhood of ants' nests by B. A. Guilding. Trans. Linn. Soc., London, vol. xxvi, p. 115–119, 1829, 33. Kingsley's Standard Natural History, vol. ii, p. 218, 218, 1884, states that *Margardodes formicarum* Guild. is found in ants' nests in the islands of Bahama. Notes on the genus *Margaroda* by Trinem Baland, Trans. Entom. Soc., Lon., p. 461, 1886, a description of *Orthezia occidentalis* Dougl., Entom. Month. Mag., vol. ii, p. 244–247, 1891, September, found with a *Myrmica* sp., and the first to be discovered and described as being found in the United States, none others being found until those found by me and described by Prof. Cockerell. Trans. New Zealand Institute, vol. xxiv, p. 38–39, *Reperisia formicicola* is described by Maskell as being found with *Tetramorum striatum* and *T. nitidum*. He states that this is the first instance that he knows of coccids being found with ants. Entom. Month. Mag., vol. iii, p. 146, 1892, on new or little known coccids, chiefly English, by R. Newstead. He describes *Riperisia tomlinii* said to feed on grass roots in ants' nests. Entom. Month. Mag., vol. iii, p. 307, 1892. Coccids in ants' nest by W. W. Smith. Entom. Month. Mag., vol. 4, p. 77–79, *Riperisia tomlinii* and *R. subterranea* Newstead are described. Entom. Month. Mag., vol. iv, p. 205–210, 1893, on the observations of coccids by R. Newstead. Entom. Month. Mag., vol. iv, 138, 1893, on new coccids in ants' nests. U. S. Agricultural Reports, 1893, p. 220, by C. V. Riley, The San José Scale being transported by ants. Lubbock also

speaks of coccids being kept by ants on p. 68 revised edition, 1895. Can. Ent., vol. xxiii, p. 222–224, 1896, three new species of coccids described as new by Prof. Theo. D. A. Cockerell. The literature treating of ants, aphides and coccids associated together so far as I have found, Science Gossip, 1st, 1865, p. 234; ants having coccids at the roots of *Passiora prinsips* as slaves. Nature, vol. x, p. 31–32, 1874, by Herman Muller, a Brazilian species of bee that makes use of a *Hembracis* larva serving to bees the same purpose as the aphids and coccids do to ants. Nature, vol. xvi, p. 309, 1877, by the Ed. *Formica flava* in possession of several kinds of insects at once, coccids, aphids and a Coleopterous larva, all being cared for by the ants (the ant should be called *Lasius flavius*). Popular Science Monthly, vol. xii, p. 116, 1877, by the Ed. *Formica flava* keeps aphids and coccids in its nests. American Naturalist, vol. xvii, p. 118, by Prof. Leidy, yellow aphids and red coccids in the nests of *Lasius interjectus* Mayr. at Philadelphia. In all probability these were the *Schizoneura corni* Fabr. and *Ripersia kingii* Ckll. Nature, vol. xlvii, p. 608, 1893. The use of ants to aphides and coccids by Theo. D. A. Cockerell, an interesting coccid *Icerya rosæ* on *Prosopis* in Jamacia attended by ants. Nature, vol. xlviii, p. 54, 1893, by J. G. Ramones and A. O. Walker. The use of aphids and coccids to ants, and what becomes of aphids in Winter. Nature, vol. xlviii, p. 54, 1893, by T. A. Sharp, the honey dew not dropped voluntarily at times by the aphids. American Naturalist, vol. xxx, p. 469, 498, relation of *Myrmecophils* Lepicmids as to ants. *Lasius umbretus* Nyl.

(To be continued.)

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SCARABIDÆ OF DODGE COUNTY, WISCONSIN.

By W. E. Snyder, Beaver Dam, Wis.

Canthon lævis Drury.—During the past six years, at different times, I have taken, all told, eleven of the species. A friend presented me several which he took at Fox Lake. I took one at that place on Aug. 10, 1894. It was alive, floating on the lake some 20 rods from shore. Have never found upward of four in a single season, nor more than two on any one day.

Copris anaglypticus Say.—Abundant all years but the past. Diligent search the past season failed to reveal more than six in

all. Never took but one in flight. Seldom seen, keeping well to its burrows. Have taken four from one hole. Prefers droppings of cattle to that of horses.

Onthophagus hecate Panz.—Exceedingly abundant from early in the Spring to late in Fall.

Atænius.—At least two species have been taken, one of which the late Dr. Riley named as *cognatus*. The other is doubtless *strigatus*.

Aphodius fimetarius Linn.—Very abundant, though not in such numbers as *inquinatus*.

Aphodius granarius Linn.—Taken some seasons in considerable numbers.

Aphodius inquinatus Hbst.—Occurs in late Fall by the millions. Each Fall for usually four days the air will be filled by myriads of this species. The flight the past Fall took place from October 12th to 15th. On the 16th none were observed. Mixed with them was an occasional *fimetarius*. Prefer droppings of horses, and it is wonderful how quickly after once discovering a "find" they will have it spread out in a thin coating over a considerable surface.

Balboceras tumefactus Beauv.—In 1893 only have I met this variety of *farctus*, when four were taken near my home on as many dates.

Balboceras lazarus Fab.—I took two specimens at Fox Lake, on July 8th, last, both found under decaying leaves in a heavy woods on an island. They were about two inches apart.

Odontæus filicornis Say.—Among a lot of material sent Dr. Riley on April, 1892, was a specimen he identified as this species. It was retained by him for the National Museum.

Geotrupes splendidus Fab.—Common about cow droppings each year, though none were found the past Summer.

Geotrupes hornii.—One specimen so identified by Dr. Riley, taken in 1892. Doubtless *semiopacus* occurs also.

Trox suberosus Fab.—Rare, very seldom taken.

Trox unistriatus Beauv.—Common, found mostly under the dried carcasses of chickens and other fowls.

Trox foveicollis Har.—Some twenty in seven years. Strange to say all but six of this number were taken from under dried carcasses of *Felis domesticus* and *Sciurus sayi*.

Trox scaber Linn.—One specimen, now in National Museum, taken in 1891.

Dichelonycha elongata Fab.—Abundant, favorite food-plant the basswood, also abundant on common hazel.

Serica vespertina Gyll.—A few taken, doubtless belonging to this species.

Serica serices Ill.—Abundant, easily taken at dusk when feeding on the hazel bushes.

Lachnosterna fusca Froh.—Our most common *Lachnosterna*. Prefers to feed on leaves of the burr oak.

Lachnosterna marginalis Lec.—Four taken as follows, from under stones lying in a pasture, three in 1892 and one on May 23, 1895.

Lachnosterna ilicis Knoch.—Seven were taken in 1893 and have found six since. All taken in early Spring fresh under stones in same pasture as *marginalis*.

Lachnosterna tristis Fab.—Abundant some years, again rare. In 1890 they were abundant, feeding on the roots of the timothy, completely ruining some fields.

Cotalpa lanigera Linn.—Very rare, having secured eight in an eight years' residence here. Most of these were presented me by friends.

Ligyrus relictus Say.—Found abundantly in manure heaps, where the manure is well rotted. Strange have never met it outside of a barn-yard.

Allorhina nitida Linn.—In 1891 a student at Wayland Academy, this city, presented me eight, which he said he took one evening from a bush on the college campus. I have found one specimen also.

Euphoria inda Linn.—Abundant in Spring and Fall. Most common in Spring along the sanded railroad track, in Fall on the sunny sides of timber. Never observed any feeding on the juice of corn stalks until this Fall, when in one day's corn cutting took sixty-one and could have taken scores more.

Trichius piger Fab.—Have some specimens corresponding to those from other localities in many particulars, which I do not hesitate to ascribe to this species.

Trichius affinis Gory.—Abundant, found most commonly on the wild species of Rosa.

A REPLY.

To the Editor of ENTOMOLOGICAL NEWS.—Sir: In regard to the article by Dr. Hamilton (ENT. NEWS, viii, p. 35) I wish simply to reply that the statements made with so much confidence by him concerning the three species of *Hemantus* of the second subgenus may possibly have in them some elements of truth. It is of course possible that I may be wrong in my ideas regarding these closely allied forms. But, a few lines further, when the writer issues a wholesale denunciation of my generic divisions of the Anthicini, he makes some statements which show unfamiliarity with the subject. For instance, the divisions which I have suggested are based upon profound structural differences in important sclerites of the pro- and mesosterna hitherto wholly unsuspected, and these divisions are, with a single exception, not at all similar to any of the feebly characterized sections founded by certain European authors upon general outline of the head and prothorax, as Dr. Hamilton would seem to wish his readers to believe; if he had studied the matter a little more thoroughly he could not have fallen into so grave a misconception. The only case that I have been able to discover with a nearly complete set of the European species before me, where any division which I have proposed proves identical with a section of the European genus, is the one before us. *Hemantus* had, I find, previously received two distinct names, one by Mulsant and another by Pic, but this will be touched upon more fully at another time.

Respectfully yours,

THOS. L. CASEY.

WASPS IN THE AIR BRAKES.—It would be a remarkable thing if a little insect should be the means of compelling the Westinghouse Air-brake Company to remodel the exhaust port of their pressure-retaining valve, says the Pittsburg *Post*, but it appears that the necessity for such a change confronts them at present, or rather confronts the railroad companies who use the brakes. The insect that causes all the trouble is the common mud wasp—a transient inhabitant of the West and Northwest—which, like the genus tramp, appears to have a penchant for traveling. The wasp builds his mud-home on the exhaust port of the valve named, and closes the vent, causing no end of trouble and expense. Superintendent Rhodes, of the Chicago, Burlington and Quincy Railroad, was the first to describe the new enemy of the air-brake, and after an exhaustive treatise on the subject recommends the alteration of the shape of the valve and form of the vent as the only means of getting rid of the difficulty.—Philadelphia *Record*.

ENTOMOLOGICAL NEWS.

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PHILADELPHIA, PA., JUNE, 1897.

THIS number of the NEWS contains forty pages, which we publish with a view of getting into print some of the many papers we have on hand even if we do make an assignment at the close of the year. If at least one entomological journal was properly supported it would be possible to publish fifty pages a month, but when many devotees of the study wont pay $1.00 a year plus those who subscribe or take the journal and have not paid for this year, it makes it pretty hard to struggle along. Several entomological journals in this country have ceased to live, and some day we may publish their obituary notices, which will be made up of the editorials in the last numbers, and make interesting reading.

HYBERNATION OF HYPENA.—With regard to this subject (ENT. NEWS, viii, p. 59) it may be well to mention that the British *H. rostralis* L. habitually hybernates, and I believe some other European species have the same habit.—R. McLachlan.

Prof. LAWRENCE BRUNER, of the University of Nebraska, has sailed for Buenos Ayres on a mission of conquest. He is going to teach the Argentinians how to fight the armies of grasshoppers that are devastating their wheat fields. The destruction of wheat by these pests in Argentina and Uruguay last year has been estimated at 23,000,000 bushels. If Prof. Bruner shall put a check upon this enormous destruction he will not achieve such fame as the great soldiers who prove most expert at what Thackeray called "the noble art of murdering," but he will deserve more than they.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

[The Conductors of ENTOMOLOGICAL NEWS solicit, and will thankfully receive items of news, likely to interest its readers, from any source. The author's name will be given in each case for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for certain issue. Twenty-five "extras" without change in form will be given free when they are wanted, and this should be so stated on the MS. along with the number desired. The receipt of all papers will be acknowledged.—ED.

PICTURE for album of American Entomological Society has been received from Mr. L. E. Ricksecker, Santa Rosa, Cal.

A DOG WORTH TWO FIELD HANDS.—Bob Payne mourns the loss of his wonderful dog, whose biography we gave in the *Enterprise* last year, and whose forte was worming tobacco. This dog, it is claimed, actually repaired daily to the tobacco patch and carefully sought for and destroyed the worms which prey on the plant. He is now at rest from his labors, and Mr. Payne says he will have to hire two hands to take his place in the tobacco field.—*Forest and Stream.*

THECLA SHERIDANII has occurred rather plentifully this Spring on the barren tops of the foot-hills near Denver. The habits of this insect have given me no clue to its food-plant; it is generally sitting on small rocks or the ground; the only flower it seems to frequent is the small, white, blooming *Saxifraga cespitosa*. It is a difficult insect to catch as it is almost impossible to see it on the wing; it is soon faded and worn, but when fresh is a very beautiful insect, the white line being conspicuous. *Anthocharis rosæ* has also appeared in some numbers. I captured *Papilio indra* on blossoms of wild cherry May 4th, the earliest time I have yet seen it.—DAVID BRUCE.

IN the room where I keep my collection there is a stationary washstand with hot and cold water. This became the abiding place of a colony of small red ants (*Monomorium pharaonis*). They were a great nuisance and got into some of the drawers of my cabinet which were made years ago, in an unsafe way, so far as museum pests are concerned. I made several desultory attempts to get rid of them, but without success. I made the collections safe by the use of naphthaline, as these little fellows wont stay where it is. I had a jar of oxide of zinc ointment on the washstand and the ants were very fond of it, and it was always covered by a lot of them. I remembered the story of the Quaker on board the ship which was attacked by pirates, one of whom was coming up the side

"hand-over-hand" on a rope. The Quaker could not fight, but he picked up a hatchet and said to the boarder, "Friend, if thee wants that rope thee may have it," and he cut it in two. The same thing occurred to myself: I thought if the ants needed the ointment more than I did they might have it, so I took it out of the jar and mixed with it about a quarter teaspoonful of white arsenic (arsenious acid). I have not seen an ant in that room since.—HENRY SKINNER.

Identification of Insects (Imagos) for Subscribers.

Specimens will be named under the following conditions: 1st, The number of species to be **limited to twenty-five** for each sending; 2d, The sender to pay all expenses of transportation and the insects to become the property of the American Entomological Society; 3d, Each specimen must have a number attached so that the identification may be announced accordingly. Exotic species named only by special arrangement with the Editor, who should be consulted before specimens are sent. Send a 2 cent stamp with all insects for return of names. **Please put date of capture and exact locality on each specimen.** Before sending insects for identification, read page 41, Vol. III. Address all packages to ENTOMOLOGICAL NEWS, Academy Natural Sciences, Logan Square, Philadelphia, Pa.

Entomological Literature.

Under the above head it is intended to note such papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology, unless monographs, or containing descriptions of new genera, will not be noted. Contributions to the anatomy of insects, however, whether relating to American or exotic species will be recorded.

1. NATURE. London, April 8, 1897.—Acquired immunity from insect stings, E. S. Morse, G. Macloskie. New works on classification of Lepidoptera, Anon., fig. ——April 29.—On the color and color patterns of moths and butterflies, A. R. W.

2. NATURAL SCIENCE. London, April, 1897.—Are the Arthropoda a natural group, E. R. Lankester.

3. LA FEUILLE DES JEUNES NATURALISTES. Paris, April 1, 1897.—Notes on *Hyptiotes anceps* (Arachnida) and description by Dr. T. Thorell, J. Castelnau, figs.

4. BULLETIN DE LA SOCIETE DES SCIENCES NATURELLES DE L'OUEST DE LA FRANCE vi, 4. Nantes, Dec. 31, 1896.—On a flight of *Harpalus* observed last Summer, Abbé J. Dominique.

5. ARCHIV FUR NATURGESCHICHTE, lxii, 1, 3. Berlin, February, 1897. —Contributions to the knowledge of palæarctic Myriapoda—iv, C. Verhoeff, 5 pls.

6. SCIENCE GOSSIP. London, April, 1897.—A new mealy bug (*Dactylopius pseudonipæ*), T. D. A. Cockerell.

7. BULLETIN DE LA SOCIETE ZOOLOGIQUE DE FRANCE, xxi. Paris, 1896.—The state of the social wasps of Brazil, H. von Ihering. Ants,

C. Janet. Observations on *Dermatobia*, P. S. de Magalhaes. Observations on *Polistes:* primitive cell and first cell of the nest, provisions of honey, hibernation, association of foundatrice queens, P. Marchal. Notes and data on the Xylophilidæ (Coleoptera, Heteromera), M. Pic. New genus and species of the group of pilicolous Sarcoptidæ (Chirodiscinæ), E. Trouessart. Preliminary notes on marine Acarina dredged from great depths by M. Koehler in the Gulf of Gascony, id. *Halacarus trouessarti*, a new species of Halacaride of the Mediterranean, D. N. Voinov.

8. The Annals and Magazine of Natural History. London, April, 1897.—Report upon the scorpions and Pedipalpi, obtained on the Lower Amazons by Messrs. E. E. Austen and F. Pickard Cambridge during the trip of Mr. Siemen's steamship "Faraday," R. I. Pocock. New species of Hymenoptera from Central America, P. Cameron. Contributions from the New Mexico Biological Station—v. Some new Hymenoptera from the Mesilla Valley, New Mexico, T. D. A. Cockerell.

9. Bulletin du Museum d'Histoire Naturelle. Paris, 1896, 7. —Fauna of the caverns of the central plateau and of the Jura, A. Viré. ——8. General considerations on the digestive apparatus of the Phasmidæ, L. Bordas.

10. Nova Acta Academiae Caesareae Leopoldino-Carolineae Germanicae Naturae Curiosorum, lxv. Halle, 1896.—Systema Geometrarum zonæ temperatioris septentrionalis, viii, C. von Gumppenberg, 5 pls.

11. Biologisches Centralblatt. Leipsic, April 1, 1897.—Recent researches on the life of wasps, C. Emery.

12. Atti e Memorie della R. Accademia di Scienze, Lettere ed Arti in Padova ccxcvii, 1896.—The bursa copulatrix of Lepidoptera, E. Verson.

13. Bolletino della Societa Romana per gli studi Zoologici, v, 5 and 6, 1896.—A case of myiasis through a larva of *Sarcophaga carnaria* Meig., Dr. G. Alessandrini.

14. Memorie della Reale Accademia delle Scienze di Torino (2), xlvi, 1896.—On some luminous phenomena presented by the scales of certain insects [Entimus], A. Garbasso, fig., 1 pl.

15. Archives Neerlandaises des Sciences Exactes et Naturelles, xxx, 5. Harlem, 1897.—On cecidiogenesis and alternation of generations in *Cynips calicis*. Observations on the gall of *Andricus circulans*, M. W. Beijerinck, 3 pls.

16. Travaux de la Societe des Naturalistes a l'Universite Imperiale de Kharkow, xxx, 1896.—Note on *Argiope lobata* Pall., W. Reinhard, 1 pl. (in Russian).

17. BULLETIN OF MISCELLANEOUS INFORMATION. Royal Botanic Gardens. Trinidad, July, 1896.—Life-history of the parasol ant (*Atta* spp.), J. H. Hart, figs.——October, 1896.—Wood destruction in Trinidad, id.

18. ARCHIVES DE ZOOLOGIE EXPERIMENTALE ET GENERALE (3), iv, 4. Paris, 1896.—On reflex blood-letting (saignée) and the means of defense of some insects, L. Cuenot.

19. DEUTSCHE ENTOMOLOGISCHE ZEITSCHRIFT, 1896, heft 2. Berlin, January, 1897.—Revision of the Meloid genus *Lydus* Latr., Dr. K. Escherich, figs. Dichotomous revision of the genera of the Tenebrionid division Tentyrini known to me, E. Reitter. Revision of the species of the coleopterous genera *Calyptopsis* Sol., *Dailognatha* and *Liparus*, id. (three papers). Zoological results of a journey of Dr. K. Escherich and Dr. L. Katharinер to Central Asia—Myrmecophilæ, E. Wasmann. Revision of the *Lomechusa* group, id.

20. FIFTH ANNUAL REPORT OF THE OHIO STATE ACADEMY OF SCIENCE. Sandusky, O., 1897.—Biological effects of civilization on the insect fauna of Ohio, F. M. Webster. Additions to the catalogue of the Odonata of Ohio, D. S. Kellicott. List of Ohio Crambidæ, J. S. Hine. Butterflies found in Summit County, Ohio, E. W. Claypole.

21. THE ENTOMOLOGIST'S RECORD. London, April 15, 1897.—The Coleoptera of a London granary, H. Donisthorpe. On the wing scales and their pigment in Lepidoptera, T. A. Chapman.

22. INVESTIGATIONS ON THE SAN JOSE SCALE.—Report to the New Jersey State Board of Agriculture, Jan. 13, 1897. By Prof. John B. Smith, State Entomologist. Trenton, N. J., 1897; 24 pp., pls. and figs.

23. MITTHEILUNGEN AUS DEM ROEMER MUSEUM, 8. Hildesheim, February, 1897.—The butterfly fauna of Hildesheim, A. R. Grote, 4 pls. of venation (in German).

24. THE BUTTERFLIES OF NORTH AMERICA. By W. H. Edwards. Third series, part xviii. Boston and New York: Houghton, Mifflin & Co. —Preface to the third volume, supplementary notes and general index to all three volumes.

25. SCIENTIFIC PROCEEDINGS OF THE ROYAL DUBLIN SOCIETY (n. s.), 54. Feb. 22, 1897.—On some dragonflies in the Dublin Museum of Science and Art., G. H. Carpenter, 1 pl.——55. April 3, 1897.—The geographical distribution of dragonflies, G. H. Carpenter, 1 pl.

26. REVUE GENERALE DE BOTANIQUE, ix, 99. Paris, March 15, 1897. --On some galls of Terebinthaceæ, H. Fockeu, 2 pls.

27. THE AMERICAN NATURALIST. Philadelphia, May, 1897.—The optic lobes of the bee's brain in the light of recent neurological methods, F. C. Kenyon, 1 pl.

28. COMPTES RENDUS. L'ACADEMIE DES SCIENCES. Paris, April 12, 1897.—Classification of the Orthoptera on characters drawn from the digestive apparatus, L. Bordas.

29. SCIENCE. New York, April 30, 1897.—An essay on the classification of insects, J. B. Smith.

30. THE CANADIAN ENTOMOLOGIST. London, Ont., May, 1897.—*Callimorpha* again, H. G. Dyar, 1 pl. Some ants and myrmecophilous insects from Toronto, G. B. King. The Coleoptera of Canada—xxiii. The Cerambycidæ of Ontario and Quebec (cont.), H. F. Wickham, figs. Notes on *Philænus*, C. F. Baker. Two new parasites from *Eupœya slossoniæ* W. H. Ashmead. Notes on predaceous Heteroptera, with Prof. Uhler's description of two species, A. H. Kirkland. *Grapta interrogationis*, A. J. Snyder. A new *Cœlioxys* from New Mexico, T. D. A. Cockerell.

31. THE TRANSACTIONS OF THE ENTOMOLOGICAL SOCIETY OF LONDON, 1897, pt. 1, April 9, 1897.—A monograph of British Braconidæ, pt. vii, Rev. T. A. Marshall, 1 pl. New Coccidæ collected in Algeria by the Rev. A. E. Eaton, R. Newstead, 1 pl. Seasonal dimorphism in African butterflies, A. G. Butler.

32. PSYCHE. Cambridge, Mass., May, 1897.—A new hypothesis of seasonal dimorphism in Lepidoptera—ii, A. G. Mayer. On mounting minute insects, particularly Micro-diptera, C. F. Baker. Notes on New England Acrididæ—iii. Oedipodinæ—iv., A. P. Morse. Description of some new genera in the family Cynipidæ, W. H. Ashmead. Life-history of *Euchætes eglenensis* and comparison with *E. collaris*, H. G. Dyar. Our greenhouse Orthoptera, S. H. Scudder. *Aulocara* and *Ageneotettix*, id. Some corrections in generic names in Orthoptera, J. McNeill.

33. 21ST ANNUAL REPORT of the Dept. of Geology and Natural Resources of Indiana, 1896 [Extract].—A collection of Indiana cave beetles, H. F. Wickham, figs.

34. SOCIETAS ENTOMOLOGICA. Zurich-Hottingen, April 15, 1897.—An hermaphrodite of *Platisamia cecropia*, C. Frings. Miscellanies from Brazilian insect life—i. Injury of trees by beetles, J. P. Schmalz.

35. THE INTERNATIONAL JOURNAL OF MICROSCOPY AND NATURAL SCIENCE. London, April, 1897.—Strange adaptations to the environment in water insects, Mrs. A. Bodington. Anatomy of Diptera, W. Jenkinson, 1. pl., R. S. Pattrick. Larva of *Stratiomys chamæleon*, C. F. George, 1 pl.

36. NUOVA GIORNALE BOTANICO ITALIANO (n. s.), iv, 2. Florence, 1897.—On some *cecidiæ* and *cecidiozoa* of *Santolina*, *Dendrobium* and *Cattleya*, G. Del Guercio.

37. VIDENSKABELIGE MEDDELELSER FRA DEN NATURHISTORISKE FORENING I KJOBENHAVN, 1896.—Danish Zoocecidiæ, S. Rostrup. Neuroptera, Pseudoneuroptera, Thysanopoda, Mallophaga, Collembola, Suctoria, Siphunculata Groenlandica, F. Meinert. Lepidoptera Groenlandica, A. Bang-Haas. Coleoptera, Hymenoptera Groenlandica, W. Lundbeck.

38. EXPERIMENT STATION RECORD, viii, 7. U. S. Dept. of Agriculture. Washington, D. C.—Summary of recent papers on economic entomology.

39. TWENTY-SEVENTH ANNUAL REPORT OF THE ENTOMOLOGICAL SOCIETY OF ONTARIO, 1896. Toronto, 1897.—Notes on the season of 1896, Rev. T. W. Fyles. Annual address of the President, J. Dearness, figs. Entomology for rural schools, Prof. J. H. Panton, figs. The importance of entomological studies to an agricultural and fruit-growing community, Rev. T. W. Fyles, figs. Two insect pests of 1896, Prof. J. H. Panton, map and figs. Notes on the insects of the year 1896, Rev. C. J. S. Bethune, figs. Insect injuries to Ontario crops in 1896, J. Fletcher, figs. Some beetles occurring upon beech, W. H. Harrington, figs. Notes on the season of 1896, J. A. Moffat, figs. Warning colors, protective mimicry and protective coloration, F. M. Webster, figs. The San José scale, id., figs. Lepidopterous pests of the meadow and the lawn, Rev. T. W. Fyles, figs. Rare captures during the season of 1896, A. Gibson, figs. The butterflies of the eastern provinces of Canada, Rev. C. J. S. Bethune, figs.

40. THE ENTOMOLOGIST. London, May, 1897.—Melanism and climatal conditions, G. W. Smith. New Hymenoptera from New Mexico, U. S. A., T. D. A. Cockerell.

INDEX TO THE PRECEDING LITERATURE.

The number after each author's name in this index refers to the journal, as numbered in the preceding list, in which that author's paper is published; * denotes that the paper in question contains descriptions of new North American forms.

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Doings of Societies.

PHILADELPHIA, May 11, 1897.

A stated meeting of the Feldman Collecting Social was held at the residence of Mr. H. W. Wenzel, No. 1509 S. 13th Street.

Prof. Smith exhibited a bottle containing about 2000 bean weevils, *Bruchus fabæ;* someone had left about two quarts of beans at his laboratory which showed indications of being infested with this pest. The speaker stated he first became aware of their presence by seeing a number of them on the window-panes; upon

closer inspection he found the beans alive with them, the whole mass being in a state of palpitation; he further noticed that apparently this commotion had caused a rise of temperature in the vessel containing these beans as they seemed quite warm to the touch, he therefore procured a thermometer which he placed in the centre of the vessel, which was a shallow wooden bowl not over four inches deep; it registered then 70°, the temperature of the air, but steadily rose until it reached a height of 101°, which seemed one of the most remarkable things he had ever noticed.

Mr. Laurent reported *Syneda graphica* and *Epirranthis obfirmaria* quite common at Clementon, N. J., last Sunday.

Mr. Kemp exhibited specimens of *Casnonia ludoviciana*, of which he has taken large numbers in hibernation during the past Winter, the specimens were all taken in the vicinity of Camden, N. J.

Mr. Seiss spoke of grasshoppers, stating he had found a ♂ specimen of *Melanoplus differentialis* Uhl. in Philadelphia on Aug. 1, 1896, also stating that Mr. Kemp had taken a ♀ of the same species in Camden, N. J., Sept. 14, 1896; the speaker stated he can find no previous record of its capture in this locality.

Dr. Griffith gave an interesting account of his recent southern trip, exhibiting the Coleoptera collected at Lake Mary, Florida, among which was a full series of the *Gopher* beetles, including two species heretofore unknown; he also explained an easy and labor-saving method of reaching the *Gopher*—shown him by one of the native professional *Gopher* hunters. The speaker also mentioned the finding of several species of *Lama*, describing the several species of *Solanum* upon which they were found.

Under new business Prof. Smith stated that, in accordance with the views of the Newark people, he considered Jamesburg the best selection for the annual field meeting—discussed by the members in general. In conclusion it was regularly moved by Mr. H. W. Wenzel, seconded by Mr. Laurent, that the next meeting be held at Jamesburg on Sunday, July 4th, and that the Feldman committee attend to the supplying of the refreshments, carried.*

Mr. H. W. Wenzel announced that he had gotten through arranging the Feldman collection of Coleoptera of eastern Pennsylvania and southern New Jersey which the Social had promised to furnish and which will be shortly presented to the Academy

* Trains leave Philadelphia at 8.25 A. M. and New York at 8.30 A. M.

of Natural Sciences. The collection consists of 16 boxes and comprises 656 genera, 1326 species and 3823 specimens.

THEO. H. SCHMITZ, *Secretary.*

NEWARK ENTOMOLOGICAL SOCIETY.—Special meeting held February 28th at the laboratory of Prof. John B. Smith, New Brunswick, N. J., nine members present and Messrs. H. W. Wenzel, Laurent and Fox as visitors from Philadelphia. Some hours were devoted to an examination of the collections, apparatus, etc., and the meeting was called to order about two o'clock.

Prof. Smith explained his plan of forming a biologic collection and his methods of preparing and preserving early stages and samples of insect work in all conditions. He urged especially upon the members the desirability of preserving all stages of all the insects by them, and urged them to gather also samples of insect architecture wherever they were obtainable. For preserving larvæ of natural shape and often in natural colors, nothing is more satisfactory than to drop the living insect into boiling hot water and allow to boil until fully distended, but not abnormally bloated. It should be then put into a two per cent. solution of formalin, which will preserve it without discoloration for a long time. If alcohol is to be used instead of formalin it should be put from the boiling water into fifty per cent. alchohol. After a time it may be transferred to eighty per cent. alcohol, and this is sufficient under ordinary conditions to preserve it perfectly.

Mr. Weidt explained how he collected the larvæ of *Arzama* in "cat-tails." He finds it simpler to pull aside the outer leaves than to cut into the reeds because, at any rate toward the end of February, more specimens were found just under the outer leaves than were found in the stalks themselves. Several other larvæ and a number of beetles were also found in similar situations.

Mr. H. W. Wenzel exhibited his collection of *Bembidium* which had been recently arranged in accordance with a paper now in press in the "Trans." Am. Ent. Soc.

Prof. Smith showed the collection of *Acronycta* which he is now monographing, and explained some of the characters used to separate the genus into groups. He also gave an outline classification of the various orders of insects, illustrating by a diagram the genealogy of the class. The annex was held at the residence of Prof. Smith at New Brunswick.

The Entomological Section

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

PROCEEDINGS OF MEETINGS.

The following papers were read and accepted by the Committee for publication in ENTOMOLOGICAL NEWS:

THE PSYCHODIDÆ OF WASHINGTON.

By TREVOR KINCAID, University of Washington.

So far as the writer is aware no Psychodidæ have been recorded from the Pacific coast, therefore it was with great interest that he undertook the investigation of the representatives of the group found in this vicinity. Careful collecting carried on during several months disclosed the fact that our Psychodid fauna is by no means a meagre one, since five distinct species were obtained. Of these only three were collected in sufficient quantities for critical comparison, and as they do not agree with any of the published descriptions they are hereby characterized as follows:

Psychoda pacifica n. sp. Length 2.0–2.3 mm.—Body brown, except lateral margins of abdomen, which are dull white. Thorax and abdomen thickly clothed with long gray hair, an especially prominent tuft upon the potserior margin of thorax. Wings ovate, apex obtusely rounded, gray, with gray hair upon the veins; fringe gray, very long upon the posterior margin, shorter and more closely applied upon the anterior margin; length 3.0–3.5 mm. Legs brown, clothed with gray hair and scales; antennæ brown, as long as width of wing, 15-jointed, with verticillate gray hairs upon the nodes; joints 1–3 closely united; joints 3–13 separated by slender pedicles; joints 14–15 small and narrowly separated; ♂ genitalia conspicuous, with long gray hair above and below, several times as long as the breadth of the end of the abdomen. Inferior appendages 3-jointed, elongated, curving dorsally; first joint stout; second joint twice as long as first, very slender, swollen slightly at base, tapering to an acute point; third joint very minute, clavate. Superior processes one-half the length of inferior, curving ventrally, 2-jointed; first joint swollen near the base; second joint almost as long as first, slender, tapering to an acute point. Ventral plate of ♀ brown, with numerous gray scales and a few scattering hairs, about as long as broad, terminating posteriorly in two blunt lobes with a shallow emargination between; ovipositor black, prominent, slightly curved.

Described from several hundred specimens taken at Seattle, Wash., during the months of March and April. Several specimens were also reared from manure, but the larvæ were not obtained.

Psychoda elegans n. sp. Length 1.6–2 mm.—Thorax and dorsal surface of abdomen brown; lateral margins of abdomen dull white; ventral surface of abdomen brownish, varying to dull white. Thorax and abdomen sparsely clothed with gray hair. Legs brown, clothed with gray hair and scales. Wings lanceolate, acutely pointed, with gray hair upon the veins; fringe gray, sparse, short upon anterior margin, somewhat longer on posterior margin; antennæ brown, one and one-half times as long as breadth of wing, 16-jointed, with verticillate hairs upon the nodes; joints 1–3 closely jointed, joints 3–13 separated by slender pedicels; joints 14–16 small, narrowly separated: ♂ genitalia brown, with gray hair above and below, somewhat prominent. Inferior appendages moderately long, curving dorsally, 3-jointed; first joint broad at base, conical; second joint as long or a little longer than first, swollen at base, tapering; third joint extremely slender, cylindrical, about one-sixth as long as second joint. Superior appendages about one half the length of inferior, 2-jointed; first joint stout, ovate; second joint slender, longer than first, tapering to an acute point. Ventral plate of ♀ brown, with numerous gray scales and a few scattering hairs, about as long as broad, terminating posteriorly in two prominent lobes with a semicircular emargination between; ovipositor black, prominent, strongly curved.

Described from about fifty specimens taken at Seattle, Wash., during the March and April.

Psychoda olympia n. sp. Length 2. mm.—Body brown, densely clothed with dark gray hair. Legs brown, clothed with dark gray hair; a number of long white hairs scattered over the tibiæ; tarsi with gray scales. Wings lanceolate, acutely pointed; length 3.5 mm.; fringe on anterior margin black, as long as the width of a cell, with a long tuft near base, on posterior margin gray, sometimes with a few black hairs, as long as the width of three cells; small patch of black hair at tip of each vein, an irregular band of black hair across wing towards apex, immediately internal to this two patches of white hair which occasionally run together into a band; small patch of white hair at base of wing; region near base with mixed black and white hair; antennæ 16-jointed, dark, clothed with verticillate gray hairs upon the nodes, except first and second joints, which are covered with scales; first joint cylindrical; second joint round; joints 3–14 fusiform, produced into tapering pedicels; joints 15–16 small, without pedicels; length in ♀ as long as width of wing with fringe, in ♂ twice the breadth of wing; ♂ genitalia not conspicuous, brown, with scattering gray hairs. Inferior appendages 2-jointed; first joint oblong, stout, united into a broad plate ventrally, which is produced posteriorly into a small, median, conical process; second joint slightly longer than first, obclavate, slightly curved, apex truncated and bearing a group of long stiff bristles. Superior appendages as long as inferior, 2-jointed; first joint oblong; second joint a little longer than first, slender, tapering to an acute point. Ventral plate of ♀ as broad as long, terminating posteriorly in two finely

pubescent lobes with a slight emargination between; anteriorly it is densely clothed with gray hair; ovipositor yellowish inconspicuous, as long as ventral plate, almost straight.

Described from two specimens taken at Olympia, Wash., during the months of April and July respectively, and from thirty specimens taken at Seattle, Wash., during the month of April.

In *P. pacifica* and *P. elegans* the wings are folded roof-like over the back when at rest, but in *P. olympia* they are spread horizontally.

In dissecting these delicate little flies several points were observed which may be of interest.

The ventral nerve cord of the abdominal region is double, the two bands being united only at the ganglia. This ladder-like arrangement of the nervous system probably points like the venation of the Psychodidæ to a generalized condition.

The ovaries are two in number and lie on each side of the abdomen, each resembling a bunch of grapes. The undeveloped eggs are oval and exhibit the usual arthropod condition of a central yolk and peripherally distributed protoplasm. They seem to develop considerably before being laid, as females were dissected which contained eggs in a much more advanced condition; these were oval, about .2 mm. long, nearly one-half of the egg being occupied by a dozen or more large embryonic cells, with prominent nuclei and nucleoli, which arched over the remaining yolk in a dome-like manner.

The study of antennæ which had been cleared and mounted in balsam brought to light some peculiar structures which are undoubtedly organs of special sense. In *P. pacifica* and *P. elegans* there is a small circular protuberance on each side of every node of the antennæ, except those at the tip and base. From the apex of each of these elevations three long, slender processes spring out, two of them projecting divergingly forward to the base of the joint in front, and the third projecting backwards to the node of the joint behind. On examining the antenna of *P. olympia* for homologous structures it was found that here the conditions were quite different. On each side of the joints of the antennæ circular depressions were found, and springing from the centre of each of these were two beautiful lanceolate wing-like structures, which, from their longitudinally ribbed appearance, would seem to be either enormously developed scales, or

else formed by the fusion of a number of hairs into a flat plate. The writer would suggest for these structures an auditory function. Those of *P. olympia* are admirably adapted for this purpose, as on each joint the four processes are so arranged that each would take up a vibration from a different direction while the others would not be disturbed, which would enable the animal to detect not only sound, but its direction.

So far as observed the Psychodids are never captured in spiders' webs and this is explained, the writer believes, by the density and peculiar arrangement of the hairs upon the body, and especially upon the legs. The little flies may often be seen calmly walking over the snares so fatal to almost the whole race of Diptera—and if they come in contact with the webs in their flight they are never more than temporarily embarrassed.

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A PRELIMINARY CLASSIFICATION OF THE SPECIES OF THE GENUS ACRONYCTA OF TEMPERATE NORTH AMERICA.

By JOHN B. SMITH, Sc.D.

For some months past I have been engaged in a monographic revision of the genus *Acronycta* as represented in our fauna, and have been assisted in this work, so far as the early stages are concerned, by Dr. H. G. Dyar. The preliminary arrangement is now completed, and the new species have been determined, but it will be weeks before the mss. is in final shape for publication, and months before it can be actually printed. Inasmuch as there are quite a number of species represented in several collections, to which mss. names must be attached when they are returned to those who kindly loaned them to me, I have considered it best to present synoptic tables of all the species, indicating those that are new and differentiating them from their nearest allies. This will give validity to the names attached to the specimens and will not anticipate the full discussion of their structural and other characters in the monograph. The preliminary division of the genus into groups may not be entirely clear without the explanatory discussion, but can be made so by any one who will arrange his species in the series and will study the sexual characters of any one species of each group. It may be said that the order of the species in the tables is arbitrary, for convenience in iden-

tification, and not that to be adopted in the collection. *Insolita* is the only species not before me, and is omitted for that reason; *dentata* and *pyralis* seem improperly referred to the genus.

Synopsis of Groups.

Primaries well developed, trigonate, outer margin oblique, apices somewhat drawn out; all the markings usually normal, but tending to break up into spots or blotches on the transverse lines, which are often marked on the costa only; psi marks not prominent. Group **Americana.**

Primaries rather abruptly widening on inner margin at base, less obviously trigonate, outer margin arcuate, the apices rectangular, or even a little rounded.

Vestiture smooth, the markings not picked out by elevated scales; the dagger marks prominent . . . . . Group **Lobeliæ** ♀

Vestiture rough or squamose, the markings picked out by elevated scales.

Psi marks evident, wing form as in *lobeliæ* . . Group **Lobeliæ** ♀♀

Psi marks wanting or barely indicated, primaries trigonate, apices rectangular; broader than in *lobeliæ* in proportion to length. Group **Persuasa.**

Psi marks present or wanting, costal margin arcuate, the primaries widening abruptly near base and subequal . Group **Hamamelis.**

Primaries short, trigonate, stumpy in appearance, or long, narrow, subequal or lanceolate . . . . . Group **Auricoma.**

Groups According to Genital Structure.

Lateral clasper a single, long, curved hook, arising abruptly from the harpes . . . . . **Americana.**

Lateral clasper scoop shaped, with a projecting long upper angle; with or without a finger-like process from upper margin. *lobeliæ* ♀ **Lobeliæ.**

Lateral clasper flat, with a long projecting angle and a finger-like process from upper margin . . . . . **Persuasa.**

Lateral clasper beak like, with or without a superior process; arising separately from harpes . . . . . *lobeliæ* ♀ **Grisea.**

Lateral clasper hook or beak like; arising from an oblique thickening at the middle of the harpes . . . . . **Hamamelis.**

Lateral clasper a slender claw, hook or process above, and a short, stout, inferior process, somewhat like a short thumb and a long curved fore-finger . . . . . **Auricoma.**

Group **Americana.**

1. All the maculation distinct; ordinary spots well defined; median lines geminate, t. a. scalloped, t. p. denticulate; secondaries yellowish in both sexes . . . . . **rubricoma.**
   Maculation more or less incomplete; median lines never both geminate, t. a. line not scalloped and t. p. line not so strongly denticulate; secondaries various . . . . . 2.
2. No longitudinal basal dash, line or streak . . . . . 3.
   A longitudinal black basal line, not divided at tip and not joined to the t. a. line, which is absent or marked on costa only . . 4.
   Basal dash very short, not reaching to the t. a. line, which is often indicated on the submedian interspace by an angulated mark . 7.
   Basal dash or streak extending to the t. a. line, or to the angulated mark indicating it . . . . . 8.
3. Secondaries smoky in both sexes; median lines and ordinary spots fairly well marked; t. p. line geminate; size very large. **americana.**
   Secondaries yellowish white in male, smoky yellow in female; primaries with an ochreous tinge, best marked in male; dagger mark opposite anal angle sharply defined and crossing the t. p. line. **hastulifera.**
   Secondaries grayish white in male, smoky gray in female; primaries bluish ash-gray; dagger mark opposite anal angle is but vaguely indicated and does not cross the t. p. line . . **hesperida** n. sp.
   Secondaries white in male, smoky gray in female; primaries ash-gray; dagger mark opposite anal angle well marked and usually crosses t. p. line . . . . . **dactylina.**
4. Primaries dark blue-gray, densely black powdered . . . 5.
   Primaries paler ashy gray, black powdering more sparse . . 6.
5. Ordinary spots on median lines usually wanting; veins slightly darker, giving a somewhat strigate appearance; t. p. line sometimes well defined as a narrow pale band . . . . . **felina.**
   Ordinary spots always discernible, sometimes well marked; t. p. line well defined and even . . . . . **frigida** n. sp.
6. Darker, the black powderings evenly distributed, veins somewhat smoky, giving a strigate appearance; t. p. line continuous, without blotchy marking . . . . . **pacifica** n. sp.
   More whitish, the black powderings irregularly massed, veins not so marked as to give a strigate appearance; t. p. line broken, with blotchy black markings . . . . . **insita.**
7. Chalky white, black powderings very fine; ordinary spots well marked; t. a. line marked on costa, internal margin and in submedian interspace; t. p. line interrupted and blotchy; dagger mark prominent and crosses t. p. line opposite anal angle . . . **cretata** n. sp.
   White with a faint creamy tinge; markings as before, but less prominent; powderings much less evident . . . . **lepocina.***

* *vulpina* Grt.

Grayish white, more evenly black powdered; orbicular absent; dagger mark not distinct and does not cross t. p. line opposite anal angle. **populi.**

8. T. a. line incomplete, but usually present in part . . . . 9.
T. a. line complete, geminate . . . . . 10.

9. White with a creamy tinge, primaries rather sparsely powdered; orbicular distinct . . . . . **lepusculina.**
Ashen gray, primaries quite densely powdered with coarse black scales; no median shade line . . . . . **cinderella** n. sp.
Ashen gray as before, but with an evident, smoky, angulated median shade line or band . . . . . **transversata** n. sp.

10. Primaries dark bluish gray; t. a. line almost upright, its two parts almost equally distinct and quite widely separated; size smallest of the group . . . . . **tota.**

Group **Lobeliæ.**

1. No black basal dash line or streak and no black dagger marks of any kind . . . . . 2.
A black basal dash, streak or line present in all cases; one or more dagger marks usually present . . . . . 3.

2. Ground color creamy white; costal marks and t. p. line black. **innotata.**
Ground color luteous, the maculation but little darker and none of it black . . . . . **betulæ.**

3. The ordinary spots are more or less obviously tied or connected by a black line or dash . . . . . 6.
The ordinary spots not connected by a black line or dash.
Scaly vestiture of primaries smooth, decumbent . . . . 4.
Scaly vestiture of primaries elevated, rough, giving the surface a more or less velvety appearance . . . . . 15.

4. Maculation strigate, all the ordinary lines and spots obscured . 9.
A more or less obvious black line or dagger mark touches or crosses the t. p. line opposite the cell . . . . . 5.
No trace of a dagger mark or black line opposite the cell of primaries . . . . . 10.

5. Dorsum of the thorax discolorous, yellow, primaries creamy white with yellow shadings, secondaries smoky; size large . **morula.**
Dorsum of thorax concolorous.
Size moderate, primaries ashen gray, no median shade line; all the dashes distinct and the markings well defined . **occidentalis.**
Size small, primaries with a more or less obvious median shade line.
Ashen gray with a slight reddish tinge; opaque; the dash opposite anal angle usually crossing the t. p. line . . **paupercula.**
Glistening or shining white, with mossy olivaceous or bluish shadings; anal dagger usually not crossing the t. p. line. **vinnula.**

Smoky or blackish, the maculation white; median lines very strongly dentate . . . . . **fragilis.***

6. Primaries creamy white, a little shining, powdered with fine brown atoms; secondaries smoky yellow . . . **lætifica** n. sp.

Primaries ash or bluish gray.

Dorsum of thorax concolorous; transverse markings normal . 7.

Dorsum of thorax discolorous, yellow; maculation strigate . 8.

7. Secondaries smoky yellowish in both sexes.

Largest of the series; expands 1.75 to 2 inches; all the black marks and dashes prominent and contrasting, the basal dash usually crossing the t. a. line . . . . . **lobeliæ.**

Expands not to exceed 1.75 inches.

Deep ash-gray with a smoky tinge; secondaries smoky yellow in both sexes . . . . . **furcifera.**

Paler ash-gray, a little mottled in appearance; secondaries white with a faint smoky shading . . . . . **hasta.**

Bluish ash-gray; maculation tending to become strigate; secondaries pure white . . . . . **manitoba** n. sp.

8. Primaries gray with a faint ochreous suffusion; all the ordinary spots and lines traceable; secondaries with a faint smoky tinge. **thoracica.**

Primaries blue-gray without suffusions; the ordinary spots and lines scarcely or not at all traceable; secondaries pure white. **strigulata** n. sp.

9. Primaries dark ash-gray with a smoky suffusion; secondaries with a yellowish tinge which is best marked in the male . **lithospila.**

10. Internal margin of primaries darkened by a black shading from base below the dash to the t. p line . . . . . 14.

Primaries uniformly gray; not darker along inner margin . . 11.

11. The dagger opposite anal angle crosses the t. p. line . . . 12.

The dagger opposite anal angle does not cross the t. p. line . 13.

12. Very dark, even, blue-gray, the maculation obscure, except for the dashes and t. p. line; t. a. line scarcely traceable . **tritona.**

Ash-gray, powdery, all the markings evident.

Darker and larger; space beyond t. p. line smoky, dagger mark opposite anal angle very heavy; secondaries soiled whitish in both sexes . . . . . **revellata** n. sp.

Smaller and paler, a little marbled in appearance; dagger mark opposite anal angle more slender; secondaries white, only a little soiled in both sexes . . . . . **grisea.**

Very even, ash-gray, without contrasts and with all the markings slender and neatly written; secondaries white in the male, smoky in the female . . . . . **radcliffei.**

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* *Microcalia fragilis*

13. A quadrate black patch on primaries between the ordinary spots. **quadrata.**

No marking between the ordinary spots.

An orange shading at base below the black dash; secondaries white in the male, soiled with gray in female . . . . **falcula.**

No orange shadings at base; secondaries white in both sexes, a little soiled outwardly in female . . . . . **parallela.**

14. Bluish gray; the dark shading along inner margin is diffuse, not defined, and does not extend upward on the t. a. line. **mansueta** n. sp.

Bluish white, the dark shading along inner margin is black, sharply defined, and extends upward so as to form a tooth on the t. a. line . . . . . **funeralis.**

15. A dark longitudinal shade extends through the middle of the primaries . . . . . 16.

Primaries without such a dusky central shade . . . . . 17.

16. Smaller, smoky gray, a little suffused with luteous in the cell; not mottled or marbled . . . . . **connecta.**

Larger, ashen gray, a transverse as well as longitudinal dark shade giving the primaries a marbled or mottled appearance. **superans.**

17. Very dark, powdery ash-gray; none of the dashes well marked; all the lines geminate, but obscure; secondaries smoky yellow, darker in the female . . . . . **brumosa.***

Paler ash-gray; at least the basal dash well marked.

The dashes neatly defined; that opposite anal angle not diffuse. **spinigera.**†

The dashes diffuse: that opposite anal angle thick and not sharply defined . . . . . **pruni.**‡

Group **Persuasa.**

Almost entirely black; the orbicular white, round, contrasting, with a central dot; all other maculation obscured . . . . **afflicta.**

Very dark ash-gray, mottled with black; all the maculation traceable, but except the orbicular, not contrasting . . . . . **persuasa.**

Dark ashy gray, more evenly washed with smoky; the black shadings tending to become strigate . . . . . **liturata** n. sp.

Ground color bluish white; all the markings black, so that the primaries appear marbled . . . . . **marmorata** n. sp.

Group **Hamamelis.**

Dagger mark opposite anal angle usually distinct, always traceable.

Secondaries of male white; ground color of primaries even, dark blue-gray, ordinary spots shaded with reddish; vestiture scarcely roughened, even of the ornamentation . . . . **albarufa.**

Secondaries smoky in both sexes.

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* = *implicita* Wlk.; = *subochrea*. † = *harveyana* Grt. ‡ = *clarescens* Grt.

Yellowish gray, the reniform yellow shaded; basal dash distinct, black, connecting with an inward angulation of the t. a. line, which is broadly black marked and so formed as to include an ovate basal space above the streak . . . . . **ovata.**

Essentially with markings as before, but the basal dash is linear or scarcely traceable and the t. a. line is not black marked; size smaller . . . . . **modica.**

Uniformly ash-gray, the geminate t. a. line evenly oblique and the dagger mark opposite anal angle tending to disappear in the male . . . . . **clarescens.***

No dagger mark opposite anal angle; at most a diffuse shading that suggests its presence.

Expands more than 1.25 inches; ground color varies from ashen gray to blackish smoky; the markings either distinct and contrasting or barely traceable . . . . . **hamamelis.**

Smaller and of a much more evenly dark ground color; does not exceed and rarely reaches 1.25 inches in expanse . . **increta.**

Size as before, but ground color of a pale, whitish gray . **retardata.**

Group **Auricoma.**

1. All the ordinary maculation present, but not contrasting: no longitudinal streaks, dashes or dagger marks; primaries elongate, subequal . . . . . 2.

All the ordinary maculation present, more or less mottled and contrasting, tending to suffusion; primaries short and trigonate . 3.

The ordinary maculation more or less obscured, tending to become more distinctly strigate; wings long, trigonate, tending to or becoming lanceolate . . . . . 4.

2. Dull ashen gray with dense black powderings obscuring the maculation; secondaries grayish white . . . . . **illita** n. sp.

Brighter gray, primaries with sparser powderings and all the maculation clear; both wings with a yellowish suffusion, most marked in secondaries . . . . . **luteicoma.**

3. Even, pale, powdery gray, without a black basal dash or streak, and with no contrasting maculation . . . . . **sperata.**

Marbled black and white; the maculation contrasting . **noctivaga.**

Primaries gray, more or less mottled; basal black streak present.

Dark bluish gray, the maculation not prominent; secondaries soiled white in the male, smoky gray in female . . **emaculata** n. sp.

Paler gray, with a slight yellowish tinge on both wings, the markings well relieved and the primaries therefore with a mottled appearance.

Somewhat broader winged and the primaries less pointed at tip; t. a. line in female always well marked . . . . **impressa.**

Narrower winged and the primaries more pointed at tip, t. a. line in female obscured by a dusky shading which extends from base to the anal angle . . . . . **distans.**

* = *hæsitata* Grt.

4. The primaries so strigate as to appear blackish and the transverse maculation obscured . . . . . 5.
The primaries ash-gray, not prominently strigate; transverse maculation distinct; an obvious dagger mark opposite the anal angle. 6.
The primaries almost white, with black powderings, in form lanceolate and without a dagger mark opposite the anal angle . . 7.
5. All the maculation obscured, and only the reniform sometimes traceable . . . . . **barnesii** n. sp.
T. p. line fairly evident and lunulate; secondaries of female dusky. **perdita.**
T. p. line evident and very strongly dentate; secondaries white in both sexes . . . . . **edolata.**
6. A distinct black basal streak; t. a. line obscure or wanting; t. p. line strongly denticulate . . . . . **extricata.**
No black basal streak; t. a. line usually evident; t. p. line not strongly denticulate . . . . . **xyliniformis.**
7. Grayish white, powdery; t. p. line lunulate; a series of black terminal dots . . . . . **oblinita.**
Bluish white, less powdery in appearance; t. p. line an even, continuous brown shading; no black terminal dots . . **lanceolaria.**

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A REMARKABLE NEW ACOCEPHALID FROM S. AMERICA.

By Carl F. Baker.

In the Herbert H. Smith collection of South American Jassidæ there are several specimens of a remarkable Acocephalid, which I refer to the genus *Carchariacephalus* Montrouzier, Ann. Soc. Ent. Fr., 1861, p. 71. The occurrence of this genus in South America is of extreme interest, the only other species being *C. forestieri* Montrouzier, described from Lifra. The insect I describe as *C. smithii* differs from *Carchariacephalus* as originally characterized only in a few minor points, agreeing with it in most of the important particulars; it is the nearest relative of *C. forestieri* among the known Acocephalini. This genus may be readily separated from all other Acocephalid genera by the following characters: Vertex much longer than width between eyes; face very short below, clypeus reaching considerably above level of eyes; head and pronotum inclined forward.

Carchariacephalus smithii n. sp. Length: ♀, 5.5 mm.; ♂, 5 mm.—Black; antennæ pale straw color, as are also legs, meso- and metasterna, usually a common commissural spot at apex of clavi, and an elongate triangular costal spot interrupted at apical third, averaging half the width

of elytra and occupying one-half to three-fifths of costal length; venter and blade of ovipositor yellowish or orange. Wings deep smoky. Head slightly narrower than pronotum; face heavily shagreened; clypeus trapezoidal, narrowed to a truncate tip, considerably exceeded by the genæ; genæ deeply creased below the eyes, not angulate outwardly; loræ very small, sublinear; front subelliptic, strongly elevated, sides rounding up, but disc flat, even; on upper third with a sharp carina which terminates above in the carinate margin of vertex. Vertex nearly a half longer than width between eyes, a third longer than pronotum, with a delicate longitudinal carina; anteriorly subelliptic, apex slightly obtusely angulate, anterior edge carinately margined; surface nearly even, longitudinally striate, the striæ slightly converging anteriorly, back of the ocelli the striæ partially replaced by punctures; ocelli large, on the disc of the vertex twice as far from the eyes as from the anterior edge. Prothorax carinate behind eyes, propleuræ transversely rugose, the other pleuræ also variously sculptured; pronotum nearly two-thirds broader than long, anteriorly broadly rounded and somewhat narrowed, hind margin gently concave, surface roughly punctured, posteriorly also transversely rugose; scutel shorter than pronotum, variously roughened, with a straight transverse groove. Elytra without an appendix, equaling tip of ovipositor; clavus and basal two-thirds of corium coarsely punctured; last ventral segment of female twice as long as preceding, the hind margin slightly bisinuate.

Described from two females collected at Rio Janeiro in September and October, one female collected at Para in July.

I take pleasure in dedicating this species to the veteran South American explorer who discovered it.

A NEW, NEARLY BLIND GENUS OF TENEBRIONIDÆ.

By MARTIN L. LINELL.
(Aid Dept. Insects, U. S. National Museum.)

TYPHLUSECHUS new gen.

Body elongate, paraliel, margined on the sides, feebly convex, glabrous and nearly smooth. Head horizontal, very large, as long as broad, slightly convex; sides parallel, with obtuse margin, posterior angles acute and prominent, anterior angles obliquely truncate, anterior margin rather deeply emarginate; clypeal suture wanting; labrum concealed; eyes each apparently of a single ocellus situated in an impressed puncture a little nearer to the lateral than to the posterior margin of the head. Another impressed puncture with smooth bottom behind each eye; a short, obtuse, oblique elevation on each side above the base of the antennæ; mandibles short, bifid at apex; mentum large, transverse

tridentate in front; last joint of palpi feebly dilated, subtruncate at apex; from the insertion of the antennæ extend deep, sharply limited grooves obliquely to beneath the hind angles and continue on the thorax beneath the front angles as a rounded cavity for the reception of the antennæ; genæ beneath the groove prominent, spiniform; antennæ longer than the head, 10-jointed, first joint a little thicker, somewhat longer than broad, second to seventh compactly placed, increasing slightly in width, the second as long as broad, a little longer than the third, eighth to tenth more loosely articulate, forming a subserrate club, eighth and ninth strongly transverse, tenth rounded, subtruncate at apex. Thorax slightly longer than broad, inside the depressed margins as broad as the head; apex truncate; side margins more strongly explanate in front, broadly sinuate at the middle, the edge reflexed; angles obtuse; base obliquely truncate each side, broadly lobed at the middle, the lobe depressed, truncate at apex, limited by a short, obtuse, oblique elevation each side; scutellum very small, triangular. Elytra as long as head and thorax together, scarcely wider than thorax; base deeply emarginate; scutellar region depressed; humeri very prominent, embracing the base of thorax; lateral margins undulating, narrowly depressed, with an acute reflexed edge; epipleuræ broad at base, gradually narrowed behind and not reaching the apex; pygidium entirely concealed; prosternum moderately broad between the coxæ, strongly dilated behind them, flat and truncate at apex; middle coxæ moderately separated, the cavities open externally; metasternum very long and wide, somewhat convex, episterna narrow, epimera concealed; posterior coxæ small, rounded; intercoxal process very broad, squarely truncate. The first four abdominal segments decreasing rapidly in length, the third and fourth without coriaceous margin. Legs short, femora slightly clavate; tibiæ slender, gradually broader to apex; spurs minute; tarsi short, narrow, beneath sparsely setose, not canaliculate; basal joints subequal in length; last joint as long as the three preceding ones together.

Type: *T. singularis* new species.

This genus seems most nearly allied to the NYCTOPORINI by the structure of the head and coxæ. The antennal grooves and the form of the antennæ themselves will, however, exclude it

from too close association with that tribe, and it may be best placed as a distinct tribe between the ANEPSINI and NYCTOPORINI.

Typhlusechus singularis n. sp.—Ferruginous, shining. Head and thorax sparsely, moderately finely punctate; an interrupted series of coarser punctures along the explanate thoracic margin. Elytra each with five very fine striæ; the intervals sparsely obsoletely punctulate; a submarginal row of coarse, deep punctures; epipleuræ obsoletely punctulate; prosternum strongly rugosely, its side pieces very sparsely punctate; metasternum and base of abdomen moderately, the last segments finely punctate. Length 1.8 mm.

Type No. 1391, U. S. N. M.

Two examples from Los Angeles County, California, collected by Mr. A. Koebele. It is the smallest Tenebrionid of our fauna.

GUIDE TO THE GENERA AND CLASSIFICATION OF THE NORTH AMERICAN ORTHOPTERA found north of Mexico. By Samuel Hubbard Scudder; 87 pages. Cambridge: Edward W. Wheeler, 1897.

The author states that this work is not published as a finality, but for temporary use of students of Orthoptera in this country who have few means for working up their collections. He contemplates a general work on the classification of our Orthoptera, of which this is merely a prodromus.

The book contains tables of characters of the families Forficulidæ, Blattidæ, Mantidæ, Phasmidæ, Acridiidæ, Locustidæ and Gryllidæ. Also tabulated keys to the genera of the families named; sixteen pages of valuable bibliographical notes are added. The volume contains no check-list or descriptions of species, which are so urgently needed, but which, we hope, will shortly appear in a succeeding volume.

As the author states that the book is intended mainly for students, we were somewhat disappointed to find a total omission of plates and figures, which we believe to be far more useful than many pages of text and intricate classification. As an introduction the work has many valuable features, and we highly recommend it to all entomologists interested in the study of Orthoptera.—C. F. S.

OBITUARY.

R. ALLAN WIGHT.—There died on Dec. 22, 1896, at Paeroa, near Auckland, New Zealand, a man who, although he had never done any systematic work in entomology, had by his indefatigable industry in observing the habits of insects and in writing about them for the agricultural newspapers, done a great deal of good both to the agricultural interests

of the colony of New Zealand and to the science of economic entomology at large. He was an active correspondent of the foremost economic entomologists of different parts of the world, and it is safe to say that a more interesting and charming letter writer has seldom lived. A short review of his life would be appropriate for any entomological journal, and his unusually eventful career will doubtless excuse a more lengthy notice than would be given perhaps to one of even greater scientific attainments.

Robert Allan Wight was 73 years of age at the time of his death. I am not informed as to the place of his birth, but, at the age of eight, he was living in Edinburgh, where his father was a partner in a banking house—a rich man, and one who had devoted some time to scientific pursuits. Among his father's intimates were several scientific men of standing. One of them was the late Dean of Westminster, Dr. Buckland, and another was M. l'Abbé de Bourdeville, Confessor to King Charles the Tenth of France, who had taken refuge about that time in Holyrood Palace. Young Wight's mother was dead at the time, and the boy, thrown somewhat upon his own resources and having a strong affection for all kinds of animal life, collected everything in the way of insects and living animals, including fishes and reptiles. The good M. l'Abbé helped him and taught him in his natural history studies, and the old man and boy were inseparable. Finally, the Abbé presented him to King Charles, and he took to the King upon the occasion of his presentation some beetles. Mr. Wight states in an interesting letter written some years ago to the late Dr. Riley (to which letter the writer is indebted for most of the facts in this notice) that the beetles did not please the King as much as he had anticipated, but he was appointed Court Entomologist, probably the first and only appointment of this kind which ever was made. The ladies of the Court made a great pet of the interesting child. He remembered among them Madame la Duchess de Berry, who was a beautiful woman at the time.

In 1835 his father's bank failed and they went to live in London. Young Wight was sent to be a clerk in a bank in Yorkshire, but he disliked money matters, and as the manager insulted him for drawing a beetle upon one of the pages of his ledger, the youngster knocked him down and gave him a thrashing. A legacy from his aunt had left him independent and he began to study medicine. He fancied the anatomy, but not the rest of the studies, and through a friend of his, the Earl of Devon, gave him an appointment in the Ecclesiastical Commission, and he began to study to become an Actuary. After passing his examinations he lost his fortune by speculation on the Exchange after having made a considerable amount of money. Shortly after this he discovered a serious fraud in matters connected with the Ecclesiastical Commission and invented 99 year leases for the Bishop of London's property. For this service he was given several years leave of absence and full pay to recover his health which he had lost from overwork. At that time he wrote a good deal for

the London journals chiefly on entomology and stories of animal life. He also did some writing for *Punch*. His health soon became so precarious that three of the best physicians in London told him he must die in less than three months of pulmonary consumption, tubercles having been fully formed on his lungs. On the advice of his physician he started for Australia, and was so ill that he had to be slung up in a chair on deck. When once on shipboard he threw his medicine overboard without having opened the parcels and declined the advice of the ship surgeon. In a few weeks he was nearly well. Arriving in Adelaide he spent some time in collecting bird skins and other specimens to send home to Dean Buckland. He then went to Melbourne, where he bought a small farm, but the gold fever broke out and he went to mining. He made a good deal of money at the diggings, realized £12,000 profit on his farm, and started for Otago, New Zealand. There he took up 100,000 acres of land far back from civilization and stocked it with sheep and cattle. He had been a good deal among the natives of Australia and knew a little of their language and picked up a stray black in Otago who followed him like a dog and was very useful in getting specimens and minding sheep. They were so isolated on the ranch that they lost the days of the week and the months of the year, but in the end he again lost his health and took his family (I do not know where or when he was married) up to Auckland and bought a beautiful place some twenty miles in the country. Here the Maori War broke out and he was offered a captain's commission, in an infantry regiment, which he declined. He afterwards took a carbine and sword in Col. Nixon's flying brigade, which led the van. He was disabled early in the war. After the war he owned and commanded a small coast vessel, and after his children grew up (six sons and six daughters) he moved farther away from the city to another tract of land where, after many a stirring adventure with the Maori natives, among others having his house burned down twice over his head, he finally succeeded in civilizing the place, and lived there for many years. In 1889 he lost his property through the old mistake of endorsing a friend and moved to the spot where, I understand, he died.

Writing in February, 1891, he says: "My good wife, thank God, is still by my side, and my twelve children are not only alive and well, but there are vast lots of grandchildren always climbing over me, and I have also, what I like so well, a magnificent scenery and plenty of animals. I spend most of my time either fighting the codling moth, or writing for journals, and trying in that way to do a little good work, but I fear to a very little purpose."

Mr. Wight's health must have failed him seriously some years back, for, although he used to be a constant correspondent, the writer had not heard from him since September, 1892. His contributions on the subject of insects, mainly published in the columns of the *New Zealand Farmer*, were admirably adapted to his audience. They were always extremely readable, and the advice which he gave for treating injurious insects was

always sound. He was greatly interested in the subject of parasitic and predatory insects, and strongly advocated the fighting of injurious species by the aid of these natural helps. He was triumphant over the success of the introduction of *Vedalia cardinalis* into California and New Zealand, and was very courteous and hospitable towards Mr. Koebele during his stop at New Zealand on one of the Australian missions. He had a great admiration for American methods in economic entomology, was a close reader of our publications and published periodical summaries of the practical results obtained.

Peace be to his ashes. L. O. HOWARD.

WASHINGTON, March 24, 1897.

MARTIN LARSSON LINELL, Aid in the Department of Insects of the United States National Museum, died suddenly May 3, 1897, of heart failure, at his home in Washington, D. C.

Mr. Linell was born at Grönby, Sweden, June 24, 1849, and was consequently in his forty-eighth year. He became interested in the study of Nature at a very early age, and in his boyhood began the collection and classification of the fauna and flora of his native country. In the year 1870 he matriculated at the University at Lund, where he distinguished himself by his proficiency in mathematics, biology and languages. It was his father's intention to fit his son for the ministry, but young Linell abandoned his university career at the end of his third year for the railway mail service.

In 1879 he married and came to America, obtaining employment in a chemical laboratory at Brooklyn, N. Y. Here he resumed his entomological studies, improving every spare moment in amassing a collection of the insects of the vicinity, particularly the Coleoptera, in which he was always especially interested. In 1884 he became a member of the Brooklyn Entomological Society, of which he afterwards held the office of Curator, and at the time of his departure from that city he had earned a reputation for accuracy in the determination of species and was regarded as the best systematist among the entomologists of New York. In 1888 he was engaged as Aid in the Department of Insects of the U. S. National Museum, which position he held at his demise. In the course of his nine years' employment at the Museum he had worked over and arranged practically the entire collection, outside of the Hymenoptera and one or two other orders, and had begun a rearrangement of the Coleoptera, both native and exotic, with a view to describing all species that were new. During his residence in the Capital city, Mr. Linell held membership in the Entomological Society of Washington, contributed to the publications of this society and the Entomological Society of New York, and wrote also for "Entomologica Americana," ENTOMOLOGICAL NEWS, and "Insect Life." His first work of importance was a list of Coleoptera collected in East Africa, published in the "Proceedings" of the Museum for the year 1896, a paper containing descriptions of thirty-four new forms

and four new genera. This was followed by two other papers on new species of North American Scarabæidæ and Cerambycidæ. Several other important contributions of like nature were completed, seven of which remain to be published. A considerable proportion of Mr. Linell's official duties at the Museum was devoted to the determination of material, for the Museum and for correspondents, and in consequence he acquired an intimate knowledge of the system of classification of all orders. All of his published papers were upon the subject of the Coleoptera, but at one time he not only contemplated the study of the Diptera, but had actually begun synoptic and descriptive work in the Tachinidæ and Hippoboscidæ, which work was abandoned when Mr. Coquillett came to Washington to make a special study of the order. His first manuscripts in descriptive work in both Diptera and Coleoptera were drawn up entirely in Latin.

Personally, Mr. Linell was of an exceptionally unselfish disposition, devoid of envy or jealousy of his fellow-workers, and being modest and retiring, with little taste for social pleasures, his entire being was concentrated in the study of Nature and of books. He was a great reader, even outside his chosen specialty, and was remarkable for his proficiency in languages, which was of inestimable value in his studies and to his brother scientists who had frequently to avail themselves of his knowledge. He appeared to be endowed with unlimited patience and with a singular capacity for what to others would be deemed mere drudgery, and it is doubtful if his equal could be found for the routine of work that was his lot for so many years. His premature death is the more to be regretted as he had practically only begun the publication of the results of his life work. He was an indefatigable worker, and had his life been spared his name would have been placed in the first rank of the systematists of his day. Two daughters are left to mourn his loss.—[F. H. C.]

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